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MISCELLANEOUS.

Considerations drawn from the study of Mole-Crickets.

By SAMUEL H. SCUDDER.

Mr. S. H. SCUDDER stated that he had recently been studying the mole-crickets with a view to their classification, and found that they were naturally divisible into two groups. For one he retained the name of *Gryllotalpa*, under which all the species had formerly been grouped; to the other he applied that of *Scapteriscus*. These two groups were separated by the following characteristics.

In *Scapteriscus* the posterior margin of the sternum of the eighth abdominal segment of the ♂ is produced into a stout prominent central tooth; in *Gryllotalpa* the margin is entire.

The mesosternal ridge of *Gryllotalpa* is prominent, and almost equally so throughout; that of *Scapteriscus* is never prominent on the anterior half of the segment, and is often limited to the posterior half, or is even obsolescent.

The fore trochanter of *Scapteriscus* is large; the free portion almost always equals the tibial dactyl in length, and is of about the same size at the tip as at the base; that of *Gryllotalpa* is proportionally small, seldom exceeding half the length of the tibial dactyl; the form is cultrate or lenticular.

Scapteriscus is furnished with only two fore tibial dactyls, both of which are moveable; *Gryllotalpa* has two moveable dactyls and a second pair which are immovable.

With but few exceptions the hind femora of *Scapteriscus* more than equal the pronotum in length, while in *Gryllotalpa* they are always shorter than the pronotum.

In *Gryllotalpa* the length of all the hind tarsal joints taken together seldom exceeds half the width of the pronotum, while they equal its whole width in *Scapteriscus*.

The hind tarsal claws of *Scapteriscus* are clothed with short hairs nearly to the tip; those of *Gryllotalpa* have hairs only at the base.

The tegmina of *Scapteriscus*, with but few exceptions, cover, when at rest, two-thirds of the abdomen; in *Gryllotalpa* they seldom conceal more than one-half of the abdomen.

The nervures of the middle field of the tegmina in the females of *Gryllotalpa* are distant and rather irregular, somewhat resembling those of the males; in *Scapteriscus* they are approximate, regular, and straight.

The anal cerci are longer than the pronotum in *Gryllotalpa*; shorter in *Scapteriscus*.

Finally, the ninth and, sometimes, the eighth abdominal segments are furnished above, in *Gryllotalpa*, with two transverse lateral rows of long hairs directed inward, as if to keep the long folded wings in place; these are absent from *Scapteriscus*, where the wings are equally long and similarly folded.

Only one species of *Scapteriscus* has been found without the limits of South and Central America, and that (occurring in a single instance in Europe) must undoubtedly be considered an emigrant from the same warm regions; the members of the genus *Gryllotalpa*, on the contrary, are found throughout the whole world, not excluding Central and South America.

Comparing these two genera with their nearest allies, *Tridactylus*, *Cylindrodes*, &c., we find great and striking differences—differences which are extraordinary compared with those which divide *Scapteriscus* and *Gryllotalpa*: the comparatively simple fore tibiæ and the abnormal appendages which supplant the hind tarsi in *Tridactylus*, the abbreviated legs fitting into cavities in the body, and the absence of articulated appendages at the extremity of the abdomen, in *Cylindrodes*—these characteristics are far more important than the sexual sculpture of the abdomen, the ultimate neuration of the tegmina, the length of the legs, the contour of the trochanters, or the digitation of the tibiæ, which separate *Scapteriscus* and *Gryllotalpa*.

The facts cited above present two features which bear upon the question of the origin of species.

First: these little mole-crickets, so unique in their structure as to be widely separated from their nearest allies, are spread uniformly over the whole surface of the globe; but few species occur in any one place, and at least one is found in every temperate or hot region.

Now, if species originate or change from physical causes, or by "Natural Selection," why is it that under every physical condition and surrounded by every variety of antagonism possible in their habitat, this same unique structural form has sprung up all over the globe?

Again, how can such theories account for another feature (common, indeed, to all natural groups), that it is not one striking characteristic which separates *Scapteriscus* and *Gryllotalpa*, and which

“Natural Selection” might have seized upon, with reference to some special benefit, but a combination of features which have no apparent dependence upon each other, correlated, but not necessarily connected? Why should “Natural Selection,” altering for its own purpose the palm of the four-fingered mole-cricket into that of the two-fingered species in South America, or developing in South America, from some previous synthetic form of mole-cricket, both the present four-fingered and two-fingered species, and in other parts of the world the four-fingered species only (destroying at the same time the primæval form all over the surface of the globe), at the same time place rows of hairs on the hinder part of the abdomen of the tetradactylate group, and none on that of the didactylate? or make the veins of the tegmina of the ♀ of one group distant and irregular, and those of the other straight and approximate? Why furnish the eighth abdominal segment of the ♂ of one with a projecting tooth, and deprive those of the others of such a prominence? Why give one long and the other short anal cerci, or clothe the hind tarsal nails of one with short hairs and leave the other naked? What have these features to do with the differences of structure we have mentioned in the palm-shaped fore leg, or in the length of the hind leg? These and similar difficulties, arising on every hand, seem to attend every derivative theory of the origin of species.—*Silliman's American Journal*, November 1868.

The Finner Whale of the North Sea.

M. G. O. Sars, the son of the well-known Professor of Christiania, has published a very interesting paper on the individual variations of the Finner Whale, in which he has compared, and formed tables of the measurements of, the eighteen specimens of the Finner Whale of the North Sea described by Sibbald, Müller, and other zoologists. He comes to the conclusion that there are six species, viz. *Balenoptera musculus*, *B. Carolinæ*, *B. gigas*, *B. laticeps*, *B. rostrata*, and *Megaptera longimana*.

The Scrag Whale of Dudley.

Mr. Cope, in the ‘Journal of the Academy of Sciences of Philadelphia,’ 1868, p. 222, describes the bones of an imperfect specimen of the Scrag Whale that was described by Dudley in 1725, but has not been seen by any naturalist since that period. It has a smooth throat, like the Right Whale; it has only four slender fingers at the carpus, and the bladebone of the Finner or *Balenoptera*. He proposes for it a new genus named *Agaphelus*. It is to be regretted that the cranium, cervical and dorsal vertebræ, and first ribs were carried away by the tide before the skeleton was examined. It proves a most interesting genus, intermediate in structure between the Right Whale and the Finner. It does not prove the truth of the theory of Capt. Atwoods, that the Scrag Whales “were probably specimens of the Right Whale that had been left by their mothers